

Name Key

Date _____

LESSON 5.1

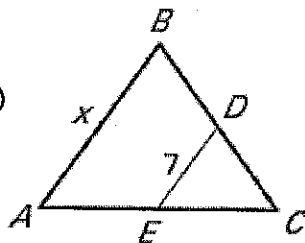
Practice B

For use with pages 294-301

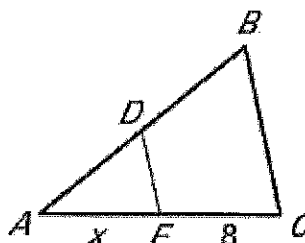
 \overline{DE} is a midsegment of $\triangle ABC$. Find the value of x .

1.
 $7 = \frac{1}{2}x$

$x = 14$

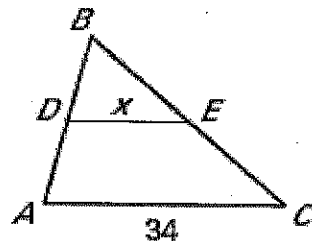


2.



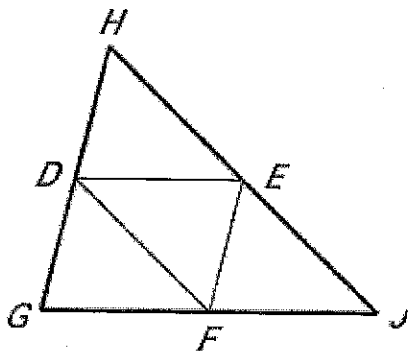
$x = 8$

3.



$x = \frac{1}{2} 34$

$x = 17$

Use $\triangle GHJ$, where D , E , and F are midpoints of the sides.14. If $DE = 4x + 5$ and $GJ = 3x + 25$, what is DE ?15. If $EF = 2x + 7$ and $GH = 5x - 1$, what is EF ?16. If $HJ = 8x - 2$ and $DF = 2x + 11$, what is HJ ?

14) $2(4x + 5) = 3x + 25$

$8x + 10 = 3x + 25$

$5x = 15$

$x = 3$

$4(3) + 5$

$DE = 17$

15) $2(2x + 7) = 5x - 1$

$4x + 14 = 5x - 1$

$15 = x$

$2(15) + 7$

$EF = 37$

16) $2(2x + 11) = 8x - 2$

$4x + 22 =$

$24 = 4x$

$6 = x$

$8(6) - 2$

$46 = HJ$

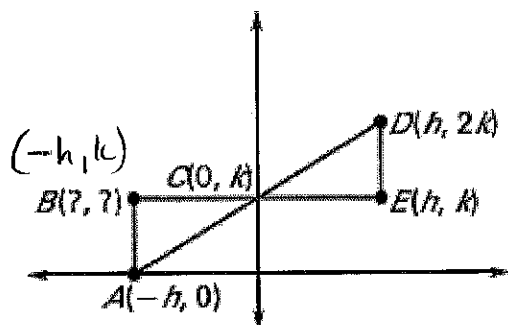
LESSON 5.1

Practice B *continued*

For use with pages 294-301

Find the unknown coordinates of the point(s) in the figure. Then show that the given statement is true.

17. $\triangle ABC \cong \triangle DEC$



$$AB = \sqrt{(-h - ?)^2 + (0 - ?)^2} = k$$

$$BC = \sqrt{(0 - h)^2 + (k - k)^2} = h$$

$$AC = \sqrt{(0 - h)^2 + (k - 0)^2} = \sqrt{h^2 + k^2}$$

$$DE = \sqrt{(h - h)^2 + (2k - k)^2} = k$$

$$CE = \sqrt{(h - 0)^2 + (k - k)^2} = h$$

$$CD = \sqrt{(h - 0)^2 + (2k - k)^2} = \sqrt{h^2 + k^2}$$

$$AB = DE, \overline{AB} \cong \overline{DE}$$

$$BC = CE, \overline{BC} \cong \overline{CE}$$

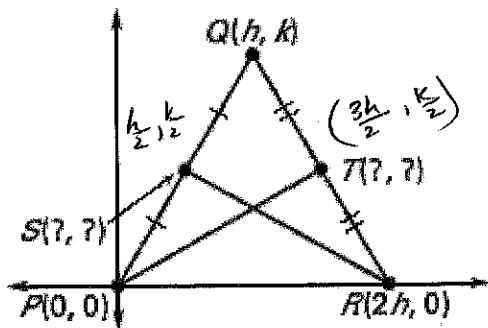
$$AC = CD, \overline{AC} \cong \overline{CD}$$

by SAS

$$\therefore \triangle ABC \cong \triangle DEC$$

SSS

18. $\overline{PT} \cong \overline{SR}$



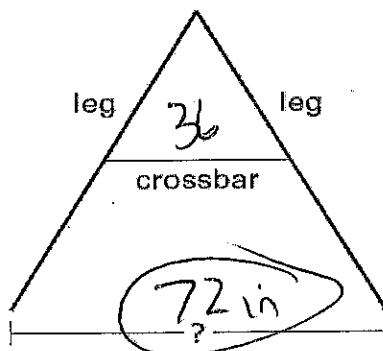
$$PT = \sqrt{\left(\frac{3h}{2} - \frac{h}{2}\right)^2 + \left(\frac{k}{2} - \frac{k}{2}\right)^2} = \sqrt{\frac{9h^2}{4} + \frac{k^2}{4}}$$

$$PT = SR$$

$$RS = \sqrt{\left(2h - \frac{3h}{2}\right)^2 + \left(0 - \frac{k}{2}\right)^2} = \sqrt{\frac{h^2}{4} + \frac{k^2}{4}}$$

by def of \cong

19. **Swing Set** You are assembling the frame for a swing set. The horizontal crossbars in the kit you purchased are each 36 inches long. You attach the crossbars at the midpoints of the legs. At each end of the frame, how far apart will the bottoms of the legs be when the frame is assembled? *Explain.*



crossbar is the midsegment of the leg

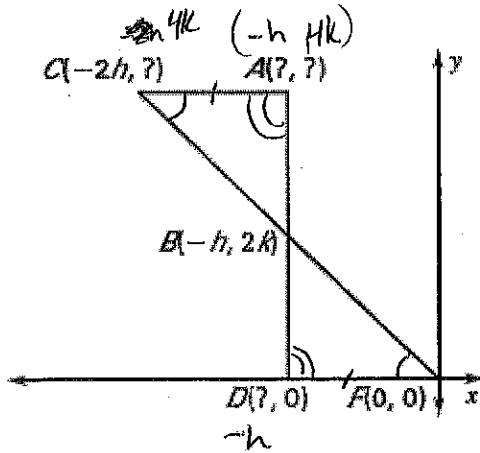
LESSON 5.1

Practice C

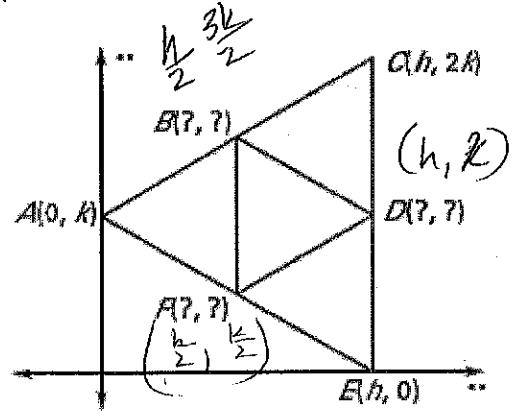
For use with pages 294-301

Find the unknown coordinates of the points in the figure.

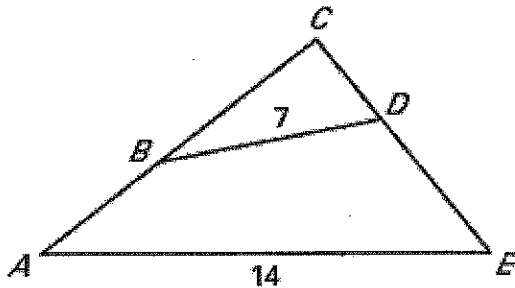
7.



8.



9. Error Analysis Explain why \overline{BD} is not a midsegment of $\triangle ACE$.



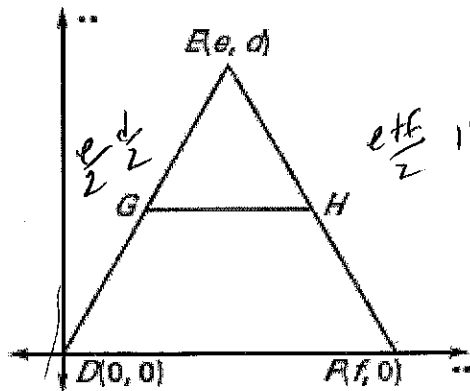
\overline{BD} is not $\parallel \overline{AE}$

In Exercises 10, write a coordinate proof.

10. GIVEN: Coordinates of $\triangle DEF$

G is the midpoint of \overline{DE}
H is the midpoint of \overline{EF}

PROVE: $GH = \frac{1}{2} DF$



$$GH = \sqrt{\left(\frac{e+f}{2} - \frac{e}{2}\right)^2 + \left(\frac{d}{2} - \frac{d}{2}\right)^2}$$

$$GH = \frac{f}{2}$$

$$DF = \sqrt{(f-0)^2 + (0-0)^2} = f$$

$$\therefore GH = \frac{1}{2} DF \checkmark$$

$$\frac{f}{2} = \frac{1}{2} f \checkmark$$